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February 23, 2022

Project/File: Douglas Well 14

Luis Pedroza, City Management Services Director City Treasurer
425 10th Street
Douglas, AZ 85607

Greetings Luis,

Reference: Stantec Scope of Work to 'Analyze Well 14 Rehabilitation Data, Perform Asset Inventory, and Identify Wellhead Treatment Options'

The following Scope of Work outlines Stantec's proposal to "Analyze Well 14 Rehabilitation Data, Perform Asset Inventory, and Identify Wellhead Treatment Options." The well is located on the west side of the City and historically produced approximately 1,000 gallons per minute (gpm) but was decommissioned due to water quality concerns (i.e., arsenic). Stantec recently developed a Work Plan to serve as a technical specification document that the City may use to solicit contractor bids for the execution of Well 14 Rehabilitation.

The proposal herein includes Stantec's Scope of Work to coordinate and support the contractor rehab, analyze the data collected from well rehab and testing, and document all information and data collected. Additionally, Stantec will perform an asset inventory review to identify what existing wellhead infrastructure may be reused and what will be necessary to bring the well back into service. Finally, Stantec will coordinate with water treatment vendors to identify options for wellhead treatment to address the high arsenic concentrations. Following data analysis, asset inventory review, and coordination with vendors, Stantec will prepare an evaluation report, which will also serve as a basis of design, to document the conditions and make recommendations to the City for bringing the well back into service.

Scope of Work

Task 100.100 - Well 14 Rehab Coordination and Data Analysis

Stantec recently completed the Work Plan for Well 14 Rehabilitation, which includes a sequence of well and equipment inspections, well rehabilitation, and testing to be completed by a City-selected Contractor. The rehabilitation tasks to be performed by the Contractor include the following:

- Pump removal and inspection
- Well cleaning and rehabilitation
- Video survey
- Pumping Tests

- Water quality sampling
- Disinfection

Stantec will coordinate with the City and the selected Contractor throughout the rehab process, to field questions or provide guidance on activities (e.g., selected pumping rates, durations for rehab activity, etc).

Stantec is proposed to be on-site for the constant rate pumping test and to collect the water quality sample near the end of the test. Stantec will coordinate with the Contractor to determine the schedule for the pumping test in order to prepare for field work and mobilization to the site. Stantec will also coordinate with the laboratory for pick-up or delivery of sample kits and will collect the water sample (Contractor to provide a smooth-nosed sample tap on the discharge line). Stantec will deliver the sample to the laboratory under chain-of-custody protocols.

Following all field data collection by the Contractor, Stantec will review the data, including the specified Technical Memorandum (Tech Memo) deliverable in the Well 14 Work Plan that shall be completed by the Contractor. The Contractor-delivered Tech Memo and supporting documents will include a summary of field activity and results. Stantec will use that information to prepare an analysis of the Well 14 condition, including pumping rates, drawdown, hydraulic performance, casing and equipment condition, and water quality. This information will be used to inform the basis of design for the recommended wellhead treatment option(s) and for bringing the well back on-line. An evaluation report will be prepared, as discussed in **Task 100.400**.

Task 100.200 – Well 14 Asset Inventory and Inspection

Stantec will complete a site visit and inspection by a qualified engineer familiar with water delivery components and mechanical / electrical systems. The engineer will visibly inspect site conditions and individual components of the wellhead, discharge piping, valves, appurtenances, electrical, chlorination, and instrument and controls (I&C) system. Stantec will also review any existing documentation for the on-site equipment, such as as-built drawings, manufacturers data, or operation and maintenance documents. A conditions assessment will result from the inspection, including a list of components that may require testing and/or replacement in order to bring the well back on-line. The results of the inspection will be summarized in the evaluation report, as discussed in **Task 100.400**.

Task 100.300 – Wellhead Treatment Options

Stantec will identify and coordinate with equipment vendors that have experience with wellhead arsenic treatment. The coordination is anticipated to include several phone calls, emails, exchange of information, and meetings with vendors and the City. The information gathered from Tasks 100.100 (Rehab Data Analysis) and 100.200 (Asset Inventory) will be critical in this task to identify appropriate wellhead treatment options that meet project objectives but are feasible for installation, considering pros and cons such as costs, schedule for implementation, and site constraints (e.g., space limitations). The options will be summarized in the evaluation report (**Task 100.400**), including a preferred alternative, for the City's consideration.

Reference: Douglas Well 14 Rehabilitation and Testing

Task 100.400 – Well 14 Evaluation Report and Basis of Design

Stantec will prepare a report that documents and summarizes the results of Tasks 100.100 (Rehab Data Analysis) and 100.200 (Asset Inventory). The wellhead treatment options will also be presented. From this information, Stantec will make recommendations for bringing the well back online, including the preferred alternative for wellhead treatment and recommended pumping rates for sustainable drawdown. The report will include a basis of design for Well 14, including limited specification criteria (e.g., size of equipment, load ratings, compatibility, etc.). The report is intended to precede and inform the detailed design and construction.

Task 100.500 – Project Management and Meetings

Stantec will manage the project, including quality control, health and safety documentation, and monthly invoicing. Additionally, Stantec will lead weekly progress update meetings with the City and may coordinate meetings with equipment vendors and/or City-selected contractors.

Schedule, Deliverable, and Fee

The schedule for well rehab is dependent upon the City-selected contractor's availability and progress. Task 100.100 (Well Rehab Data Analysis) will be completed within two (2) weeks following completion of the specified Tech Memo (to be provided by the Contractor). Task 100.200 (Asset Inventory) and 100.300 (Wellhead Treatment Options) will be on-going throughout the well rehab and testing work. Stantec will prepare an evaluation report for Well 14, including a basis of design with supporting attachments. A Draft Report will be provided to the City within four (4) weeks following the completion of the specified Tech Memo (to be provided by the Contractor) and Asset Inventory. A Final Work Plan will be provided within two (2) week following City review and comments. Stantec's cost to complete this Scope of Work is $91,005, including up to $15,000 for laboratory testing.

Reference: Douglas Well 14 Rehabilitation and Testing

City Scope of Work Approval: This proposal for "Analyze Well 14 Rehabilitation Data, Perform Asset Inventory, and Identify Wellhead Treatment Options" will be completed through the City of Tucson Collaboration (COTC) Cooperative Agreement contract between Stantec and the City.

Thank you,

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FEE ESTIMATE - Analyze Well 14 Rehab Data, Perform Asset Inventory, and Identify Wellhead Treatment Options

Name	Principal Engineer	Hydrogeologist, Technical Lead	Water Resources Engineer	Hydrogeologist	Senior Hydrogeologist, Quality Review	Engineer	Electrical and I&C	Project Manager	Travel costs (mileage, lodging, meals, etc.)	Laboratory costs	Field Equipment
	Bryck, Jack	Graves, Dustin	Wang, Sixue	Ward, Michael	Weinig, Walter	Hamblin, Elizabeth	Armenta, Marty	Raman, Aaditya			
Project Billing Rate	$251.00	$188.00	$164.00	$164.00	$243.00	$159.00	$220.00	$220.00	$1.00	$1.00	$1.00
Total Units (T&M)	133	122	62	12	6	68	24	15	1300	15000	400
Fee (T&M)	$33,383.00	$22,936.00	$10,168.00	$1,968.00	$1,458.00	$10,812.00	$5,280.00	$3,300.00	$1,300.00	$15,000.00	$400.00

Project Summary	Hours	Labour	Expense	Subs	Total
Total	442	$89,305.00	$16,700.00	$0.00	**$106,005.00**

Task Code	Task Name	Units										
100	**Well 14**											
100.100	Well Rehab and Data Analysis	2	60	30	4	3				800	15000	400
100.200	Asset Inventory and Inspection	40	6				8	8		500		
100.300	Wellhead Treatment Options	36	10									
100.400	Evaluation Report and Basis of Design	40	36	32	8	3	40	16				
100.600	Project Administration and Management	15	10				20		15			

Task Type	Hours	Labour	Expense	Subs	Total
Time & Material	**442**	**$89,305.00**	**$16,700.00**	**$0.00**	**$106,005.00**
Time & Material	99	$18,087.00	$16,200.00	$0.00	$34,287.00
Time & Material	62	$14,200.00	$500.00	$0.00	$14,700.00
Time & Material	46	$10,916.00	$0.00	$0.00	$10,916.00
Time & Material	175	$33,977.00	$0.00	$0.00	$33,977.00
Time & Material	60	$12,125.00	$0.00	$0.00	$12,125.00